

INSTRUCTION MANUAL

MODEL 7630/7631

PHOTOMETER

Serial Number

McPHERSON

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IMPORTANT NOTICE

ELECTRICAL EQUIPMENT MAY BE DANGEROUS IF NOT HANDLED WITH CAUTION. ALL INSTRUMENTS SHOULD BE OPERATED WITH PROPER GROUNDS ON POWER LINES. ELECTRICAL OR ELECTRICALLY-OPERATED COMPONENTS SHOULD NOT BE EXPOSED OR HANDLED WITHOUT BEING SWITCHED OFF AND DISCONNECTED FROM THE POWER LINE.

S.I./McPHERSON WILL NOT BE RESPONSIBLE FOR ANY DAMAGE CAUSED BY SUCH UNITS IF INSTRUCTIONS HEREIN ARE NOT FOLLOWED, AND REPAIRS ARE NOT PERFORMED BY COMPANY-TRAINED OR COMPANY-LICENSED PERSONNEL.

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I INTRODUCTION

This manual describes to operation and controls for the 7630/7631 S.I./McPherson, 530 Main Street, Acton, MA 01720, Telephone: (508) 263-7733.

II PHOTOMETER DESCRIPTION

The S.I./McPherson Model 7631 Photometer is an all solid state instrument which can be used with most commercially available photomultiplier tubes having dynode voltages up to 2000V. The Sensitivity Range of the 7630 3 nanoamps (nA) to 1000 nA may be operated in either a Manual Mode or in a Auto-Ranging Mode over six sensitivity ranges. The L.E.D. indicators serve to indicate range in use. Photo current is read on a precision analog meter.

Dark Current Suppression is provided by a High/Low Selection Switch together with a ten turn potentiometer for fine adjustment. Full suppression on all ranges is provided. Photomultiplier Tube overload protection is standard together with overload indicator light and reset button.

The regulated photomultiplier high voltage power supply included with the 7630 is continuously variable from 0 to 1000VDC, or 0 to 2000VDC as an option. Momentary readout of High Voltage is provided together with Meter Zero Switch.

III PHOTOMETER CONTROLS & INDICATORS

The controls and indicators are located on the front panel (See figure 1), or read panel where indicated.

A. Analog Meter - Reads out the amplified photomultiplier (PMT current in microamps. Full scan on the meter corresponds to the value selected on the Sensitivity Range control, (D) below.

B. PMT/HV/METER ZERO - A 3-position toggle switch, which in the central (normal) position displays the photocurrent on the meter. In the (momentary) up position, it displays the PMT high voltage. The voltage is read on the upper scale.

Note: For the 7631 (0-2000V) photometer, multiply the meter reading by 2.

In the (momentary) down position, the meter zero can be read.

C. TIME CONSTANT- The electronic time constants available are 0.25, 0.5, 1 and 5 seconds, and represent the time required for the signal to reach 63% of its full value.

- D. SENSITIVITY - This control selects the amplifier gain range, the largest value (1.0) representing 1 microamp full scale on the meter. In the Auto position the amplifier autoranges to the sensitivity range needs to provide a meter reading between 1/3 and full scale on the meter.
- E. BACKGROUND SUPPRESSION - The control allows an offsetting current to be added to the signal current, so that background signals due to scatter and/or fluorescence can be zeroed. The High and Low ranges are appropriate for high and low values of the background signal. Full scale suppression is possible at all sensitivity ranges.
- F. GAIN (PMT HIGH VOLTAGE) - This control varies the PMT voltage continuously between zero and 1000V, (or zero and 2000V). The value of the voltage can be read from the analog meter by pushing the toggle switch (B) above momentarily upward.
- G. RESET - If the photomultiplier is exposed to a light level which produces an amplified signal greater than 30% over full scale on the meter, the PMT voltage is turned off automatically. This feature protects the tube when the detector is exposed to excessive light. Once low light levels are reestablished, the PMT voltage can be restored to its initial value by pushing the Reset button. If the PMT voltage is too high for Sensitivity Range selected, it may be necessary to reduce the PMT voltage, and in some cases the Sensitivity as well. This is indicated when pressing the Reset button fails to fully correct the overload condition.
- H. PMT OVLD RESET (Rear Panel) - In the "Auto" Mode, this feature will automatically reset the PMT supply when lower light levels are reestablished.

IV. MODEL 7630/7631 PHOTOMETER SPECIFICATIONS

ACCURACY: $\pm 2\%$ of full scale from 10 to 1000 N.A.

AMPLIFIER DRIFT: Less than .1% of fullscale per day
plus .001% of fullscale (after 15 minutes
warm-up).

RECORDER OUTPUT: 0 to 1V output, and sensitivity range.

PHOTOMULTIPLIER POWER SUPPLY: 0 to 1000V @ 4ma standard, 0 to 2000V
@ 2ma optional. High voltage BNC Connector
provided. Output is continuously variable
over full range. Voltage can be measured
on analog meter by momentary switch.

POWER REQUIREMENTS: 115 VAC 50/60Hz standard; 100, 200,
230 and 240 VAC optional.

McPHERSON

GOLD LINE

CERTIFICATION

S.I. McPherson certifies that its products are thoroughly tested and inspected and meet specifications published as furnished by the company when shipped from the factory.

WARRANTY AND ASSISTANCE

McPherson products are warranted to be at date of delivery free from defects in material and workmanship and conform to the specifications furnished by the company. The company's obligation under this warranty is limited to servicing or adjusting an instrument returned to the factory, prepaid, and to repairing or replacing at the factory any part or parts thereof. All items manufactured by **McPherson** carry a warranty of one year on the above terms. All purchased items carry the original manufacturer's guarantee.

McPherson shall not be liable for consequential damages resulting from accidents, alterations, misuse, improper installation, improper training, improper qualified personnel, operation on low or excessive voltages, or any use in violation of the operating instructions furnished by the company.

If any defect appears upon receipt, the purchaser shall promptly notify the company. No material will be accepted for repair or replacement without prior authorization from the company. Upon such authorization and in accordance with instructions of the company, parts, materials or equipment for which repair or replacement is requested shall be returned to the company for examination, with shipping charges prepaid by the purchaser. Final determination as to whether a product or part is actually defective rests with the company.

An estimate of repair charges will be submitted to the purchaser before servicing the equipment.

The company reserves the right to make changes or improvements upon its products without imposing any obligations upon itself to install the same upon its products previously manufactured.

This warranty is in lieu of all other obligations or liabilities expressed or declared on the part of the company, and the company neither assumes, nor authorizes any other person to assume for them, other obligations or liability in connection with the sale of equipment manufactured by **McPherson**.